

Appln No. 09/866,546

Amdt date August 4, 2005

Reply to Office action of June 27, 2005

Amendments to the Specification:

Please replace the paragraph beginning on page 2, line 35 with the following:

The invention is directed to systems and methods for enabling a wireless communication device to communicate with a variety of wireless networks. In particular, a portable communication device constructed according to the invention can communicate with different networks as the device is moved through the areas of coverage supported by the different networks. To this end the invention provides techniques for controlling and managing network access to several networks. As a result, a device constructed according to the invention can take advantage of services ~~provides~~ provided by a particular network when the device is within the area of coverage provided by that network. For example, when the device is within the area of coverage of a network that provides high speed Internet access, the device may switch from the network with which it was connected to the network with the high speed Internet access. Similarly, the device may, for example, connect to networks that provide different quality of service, low cost service and/or different services (e.g., voice, data, multimedia, etc.).

Please replace the paragraph beginning on page 3, line 18 with the following:

Appln No. 09/866,546

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In one embodiment, the invention relates to systems and methods for implementing multi-mode wireless communication devices such as PDAs or multi-function (e.g., data, voice, and multimedia) mobile phones that best take advantage of the wireless networks in their proximity. That is, in the case where a nearby wireless network (WAN, LAN, or PAN) happens to provide more data bandwidth and/or better quality of service (QoS), a multi-mode wireless device may switch to that particular wireless network to access these services. Several network coverage scenarios include, for example:

Please replace the paragraph beginning on page 16, line 15 with the following:

The default state for the dual-mode controller is the standby mode 170. In the absence of any network connection, the dual-mode controller initiates a new network scan request 172 every 10.24 seconds. The very first network scan performed by the dual-mode controller searches for a HomeRF network (block 174). In this state, a new device performs a network scan procedure on one of the three HomeRF network scan frequencies for 1.52 sec searching for a CP beacon. Unless a beacon is received (block 176), all three scan frequencies are tried (each for 1.52 sec) in search of a CP beacon as shown in Figure 9. Total duration of the HomeRF network scan procedure is 10.24 seconds. If a TDMA beacon is received within the scanning window, the new unit extracts the network identity information and the timing information from the beacon to join the HomeRF

Appln No. 09/866,546

Amdt date August 4, 2005

Reply to Office action of June 27, 2005

network. However, before the new device attempts to join the HomeRF network based on the beacon information, the user is informed via a display message etc., about the existence of a HomeRF network and the types of services that are available (block 178). Accordingly, the user may either approve or disapprove joining the HomeRF network for the specified services (block 180). If the user directs the dual-mode controller to establish a connection with the HomeRF network, the dual-mode device then joins the HomeRF network and maintains connection (block 182) until the device transitions into an idle mode (block 186) or until the CP beacon is no longer received by the unit (block 184). In both cases, the dual mode device goes into the dual-mode standby mode 170. If the user does not approve connecting to a HomeRF network, the dual-mode controller automatically starts an inquiry scan procedure to search for the existence of a Bluetooth network (block 188). As illustrated in Figure 10, the dual-mode controller jumps to the same state 188, that is, starting a Bluetooth inquiry scan if the initial HomeRF network scan fails to find a CP beacon. In this case, the Bluetooth inquiry scan procedure is also run for 10.24 seconds. This time duration is divided into four inquiry scan periods of each 2.56 seconds. As shown in Figure 9, the inquiry scan procedure involves searching for a valid inquiry code for 11.25 msec (covering 16 inquiry frequencies) in a 2.56 second interval at a single hop frequency. The same procedure is repeated at different hop frequencies until an inquiry code is received, but no more than 3 times. If a valid Bluetooth inquiry code is not received within the 10.24 second interval (block 190), the dual-

Appln No. 09/866,546

Amdt date August 4, 2005

Reply to Office action of June 27, 2005

mode device goes back to the dual-mode standby mode 170. In case the unit receives a valid inquiry code (block 190), it goes into an inquiry-response mode 192 followed by the connection set up procedure 194 with the master as described earlier in the text. Finally, if there is no more data to be sent, the Bluetooth connection is terminated (block 196), and the dual-mode device goes back into the dual-mode standby mode 170.

Please replace the paragraph beginning on page 21, line 1 with the following:

Figure 12 describes the 802.11b network scan procedure for a new device to join an 802.11b network managed by a Point Controller (PC) device. In this case, the PC transmits a distinctive "beacon" every "CFP_(Contention Free Period) _Repetition_Interval" that is bounded by "CFPMaximumDuration" parameter per IEEE 802.11b MAC specification. Unlike in an HomeRF network, 802.11b transmissions take place at the same fixed carrier frequency, i.e., no frequency hopping is allowed. The beacon contains specific information about the existing 802.11b network.

Please replace the paragraph beginning on page 21, line 34 with the following:

The dual-mode controller 200 includes a synchronous state machine that combines the standby, inquiry scan, network scan, and connection procedures carried out by Bluetooth and

Appln No. 09/866,546

Amdt date August 4, 2005

Reply to Office action of June 27, 2005

802.11b_devices. It is important that dual-mode Bluetooth-802.11b devices interoperate with standards based Bluetooth-only or 802.11b-only devices. Network scan and connection setup procedures for a dual-mode device should follow the same rules as specified in the Bluetooth or 802.11b standards. In other words, dual-mode operation should not alter the synchronous time flow of interdependent states (idle, network scan, scan response, etc.) that accomplish the respective network access procedures for Bluetooth or 802.11b networks. Consequently, the objective of this invention disclosure is to devise a dual-mode controller such that Bluetooth and 802.11b network access state machines are combined without individually altering their functionalities. A description of one of the embodiments of the dual-mode controller state machine is illustrated in Figure 14.

Please replace the paragraph beginning on page 22, line 24 with the following:

The default state for the dual-mode controller is the standby mode 230. In the absence of any network connection, the dual-mode controller initiates a new network scan request 232 every "CFPMaximumDuration" per 802.11b MAC specification. The very first network scan performed by the dual-mode controller searches for an 802.11b network (block 234). In this state, a new device performs a network scan procedure 236 searching for a 802.11b PC beacon. Total duration of the HomeRF network scan procedure is "CFPMaximumDuration". If a TDMA beacon is received within the scanning window (block 238), the new unit extracts

Appln No. 09/866,546

Amdt date August 4, 2005

Reply to Office action of June 27, 2005

the network identity information and the timing information from the beacon to join the 802.11b network. However, before the new device attempts to join the 802.11b network based on the beacon information, the user is informed via a display message etc. about the existence of the 802.11b network and the types of services that are available. Accordingly, the user may either approve or disapprove joining the 802.11b network for the specified services (block 240). If the user directs the dual-mode controller to establish a connection with the 802.11b network, the dual-mode device then joins the 802.11b network and maintains connection until the device transitions into an idle mode 244 or until the PC beacon is no longer received by the unit 242. In both cases, the dual mode device goes into the dual-mode standby mode 230. If the user does not approve connecting to the 802.11b network, the dual-mode controller automatically starts an inquiry scan procedure to search for the existence of a Bluetooth network 248. As illustrated in Figure 14, the dual-mode controller jumps to the same state 248, that is, starting a Bluetooth inquiry scan if the initial 802.11b network scan fails to find a PC beacon. In this case, the Bluetooth inquiry scan procedure is run for 10.24 seconds. This time duration is divided into four inquiry scan periods of each 2.56 seconds. As shown in Figure 13, the inquiry scan procedure involves searching for a valid inquiry code for 11.25 msec (covering 16 inquiry frequencies) in a 2.56 second interval at a single hop frequency. ~~Same~~ The same procedure is repeated at different hop frequencies until an inquiry code is received but no more than 3 times. If a valid Bluetooth inquiry code is not

Appln No. 09/866,546

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Reply to Office action of June 27, 2005

received within the 10.24 second interval, the dual-mode device goes back to the dual-mode standby mode. In case the unit receives a valid inquiry code 250, it goes into an inquiry-response mode 252 followed by the connection set up procedure 254 with the master as described earlier in the text. Finally, if there is no more data to be sent, the Bluetooth connection is terminated 256, and the dual-mode device goes back into the dual-mode standby mode 230.